it would. My working life has been passed in a great industrial region where this faint-hearted belief in the utility of science has been the one real obstacle to the progress of good science of every kind. At Leeds I have occupied myself greatly with the promotion of applied science, as in duty bound. But it has also been in the sure and certain hope that applied science, worthy of the name and really worthy of acceptance by industry, was indissolubly linked in bonds of mutual benefit to the purest and highest science that was ever dreamed of even by my chemical brethren, whose unworldly "stinks" profane the cloisters of more sequestered seats of learning.

It has been a hard fight, and though it would be unjust to say there have been no gains, I long since came to the conclusion that nothing short of a national cataclysm was likely to bring about anything approaching the change of heart that was so desirable and so necessary.

The cataclysm of war has, in fact, done this great thing for science. There is indisputable evidence of it, and I believe that at last British industry is generally, not exceptionally, on its way to use science well. That being so, I ask: Is there any possible escape for British industry and the British public from promoting pure science, and promoting it handsomely? I do not see it. Of course, they will not begin by endowing professorships in radio-activity or relativity, nor yet, perhaps, in that very pure chemistry which is the dearest thing to me; but they will be obliged to do it, and to do it before long. In the first instance, they will ask for what they now know they want: first-rate men who can apply science to the practical problems of industry. Already to a large extent they know that such men must have in them the root of the matter in the form of real scientific knowledge and skill, and it will follow as the day the night (if you so regard it) that science, pure and simple, must also be the object of their self-interested or patriotic solicitude.

I, for one, shall be glad to have it on those terms. For what, let us frankly say, are the alternatives for pure science? One I have just tried to set forth; the other, it seems to me, is a direct appeal for pure science, either because it is pure or because it is useful. If you extol it because it is pure, it is a worthy effort that I should honour with all my heart on one condition, and that is that you should avoid the incalculable mischief of trying to make out that there is in essence any distinction between pure and applied science, or that you should give just cause for the belief that there exists a brotherhood in science who set themselves up as the elect and disdain the implications of science in the practical arts that serve and preserve mankind.

If you extol pure science simply because it is useful —which by hypothesis you do not want to do—you embark on the task, long since essayed and long sustained, of teaching people by exhortation what at last they are in the way of finding out surely for themselves. To do that runs counter to all the precepts I have drawn from my experience of teaching.

I know very well what it is to be a prophet of pure science, even if only a minor or a minimus one, crying in the wilderness, and believe I can enter somewhat into the feelings of the major and maximus ones who are anxious and impatient under the present aspect of affairs. But they may be asked earnestly to consider the other point of view also, and to bethink themselves whether, after all, a great deal of the Philistinism of our people is not due to the detachment of locality, of interest, and of intercourse that in the past has been justly chargeable to the world of learning.

The British Association for the Advancement of Science was founded for the purpose of bringing a knowledge of science, its glories and its uses, among the people. It has done a great work, a much greater work than is known to those who will not sacrifice a week of the Alps or the oceans to do their bit and to experience the stimulus and profit derivable from the meetings—chiefly, it must be admitted, outside the section-rooms. The British Association needs revitalising, and I believe it can be revitalised. If our men of science would rally to it, it might do much that seems either to be neglected or to be falling into the hands of new organisations, the number of which alone, to say nothing of their particular distinctions or their subscriptions, is becoming quite bewildering.

It is, of course, the British way to have a multiplicity of disconnected organisations doing, or trying to do, much the same thing. We have won the war (it is true some others "also ran"), and Britain is justified in her institutions. To that no one subscribes more heartily than I, but we made some mistakes; and though organisation in the German way may be the mental path to inhumanity if followed far, I think we might profit by using a little more co-operation as we go our several ways.

Chemistry, it has been said, is a French science. Be that as it may, the immortal Lavoisier, who did more than anyone to revolutionise chemistry, began to investigate combustion because he was interested in lighting the streets of Paris. So at least says M. Le Chatelier, who is, I think, a chemist *assez pur*. According to my reading of history, so much pure science has arisen, not from the heavens above, but from the earth earthy beneath, that I will never, if I can help it, be penned off by any principality or power from the fraternity of applied science. Besides that, I owe them personally more than can ever be acknowledged for heading me off certain great dangers that threaten the academic life, and for helping me in countless ways with the promotion of pure science. We may rejoice without reserve in their temporary monopoly of popular favour. ARTHUR SMITHELLS.

The Theory of Hormones Applied to Plants.

No one would have read Prof. Bayliss's review (NATURE of December 12, p. 285) of Dr. Jacques Loeb's experiments on the "chemical correlationship" in plant growth with greater interest than John Hunter, for he had carried out many experiments on growing beans to elucidate the phenomena which are now explained on the theory of hormones. Hunter was familiar with phenomena of a similar kind in animals, and his experiments on plants were made primarily to elucidate that mysterious mechanism which went in Hunter's time under the name of "sympathy." An account of Hunter's experiments, carried out between 1772 and 1790, will be found in "Essays and Observations by John Hunter," edited by Sir Richard Owen, and published in 1861 (vol. i., p. 367). These observations were saved from destruction by William Clift. ARTHUR KEITH.

Royal College of Surgeons, London, W.C.

RESEARCH ASSOCIATIONS AND OTHERS.

RESEARCH is the cry in every direction, but the public still needs instruction as to what it means and the conditions requisite for progress. Discovery of new principles on which advance can be made in the fundamental knowledge of Nature will probably be accomplished in the future, as in the past, through the genius of the few gifted men, but the dissemination of the right kind of knowledge and the creation of a widely